

Chapter 12

Field Fire Assessment of Homesteads and Manhattan Project and Cold War Resources Impacted by the Cerro Grande Fire

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INTRODUCTION

Chapter 11 presented a general overview of historic non-Native American cultural properties at Los Alamos National Laboratory (LANL). This included general observations about the effects of the Cerro Grande Fire on these resources as well as management recommendations for mitigating the effects of the fire. It dealt with the general nature of impacts to Homestead period resources and a specific listing of Manhattan Project and Early Cold War period buildings and structures directly impacted by the fire.

The present chapter details the results of the field assessments of historic archaeological sites within the boundaries of the Cerro Grande Fire at Los Alamos National Laboratory. These historic resources were evaluated in much the same manner as the Native American archaeological sites described in Chapters 6 through 10. The sites are divided into three major categories—(1) Homestead period (including cabins, corrals, trash deposits, boundary fences, and similar features); (2) a combined treatment of Manhattan Project and Early Cold War (primarily represented by trash deposits); and (3) undetermined historic affiliation. Included within the Homestead period is a Civilian Conservation Corps (CCC) camp utilized for the construction of State Route 4. Non-fire related impacts and recommended treatments for impacted sites are also discussed. As with Chapters 7 through 10, the impacted resources are described by facility management unit.

SPECIFIC FIRE EFFECTS ON HOMESTEAD PERIOD ARCHAEOLOGICAL SITES

Homestead Period Fire Effects in Engineering Sciences and Applications Division (ESA)

The Cerro Grande Fire impacted at least two Homestead period historic sites in ESA (Table 12.1). The intensity of the Cerro Grande Fire in ESA ranged from low to severe, although both historic sites were in a moderately burned area. Fire impacts to the historic sites include soot staining on masonry, charring of artifacts, and stump holes and snags that pose threats to the site architecture and integrity.

Table 12.1. Homestead Period Sites in ESA Directly Impacted by the Cerro Grande Fire.

| Technical Area | LA Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Additional snags/partial burned trees in site area | Suppression | Rehabilitation | Enhanced Erosion |
|----------------|-----------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|--|-------------|----------------|------------------|
| 16 | *16807 | | | | | | | | | | | | |
| 16 | 21369B | Moderate | No | No | No | Yes | No | No | No | Yes | Yes | No | |

*See discussion for FMU-80

TA-16

LA 16807. This site consists of the remains of a large historic homestead that straddles the boundary between ESA and FMU-80. Because the majority of the site is located within FMU-80, the discussion will be deferred for inclusion below with the descriptions of impacts in FMU-80.

LA 21369. This site consists of two components, a lithic and ceramic scatter (LA 21369A) and several historic structures (LA 21369B). The historic component (Figure 12.1) consists of the remains of at least



Figure 12.1. General view looking northwest of a historic foundation at LA 21369B with B. Harmon (left) and J. Nisengard.

seven structures, tuff blocks, and concrete. These features represent the remains of a pre-World War II Civilian Conservation Corps (CCC) construction camp associated with the building of State Route 4. Together these components measure approximately 100 m north-south by 20 m east-west. The site has been extensively bulldozed and is disturbed by two roads running north-south and parallel to one another. This site is fairly disturbed, a great deal of gravel litters the site and there are several large holes between the small mounds; the mounds consist of concrete and tuff blocks. Some bent metal is also present. A small concrete structure is associated with a can scatter to the north of the concentration of the structure mounds. The site burn severity is moderate. Stump and root holes exist adjacent to masonry and in the site, and additional snags are in the site area. No treatment is recommended for this site.

Homestead Period Fire Effects in Dynamic Experimentation Division (DX)

A total of 22 Homestead period sites in DX were directly impacted by the Cerro Grande Fire (see Table 12.2). The intensity of the Cerro Grande Fire in DX ranged from low to severe. Fire impacts to historic sites in DX included cracking and spalling on masonry as heat from the fire sometimes caused masonry blocks to crack. Smoke and soot damage often occurred on the masonry blocks associated with historic structures and rock features. Burned trees resulted in abundant stump and root holes that damaged architectural features.

Additionally, fallen trees and partially burned trees also affected the appearance and stability of cultural remains in these areas. Sites that contained architectural wood (i.e., cabin foundations or corrals) were most damaged as much of the wood that comprised the feature was burned and consequently destroyed during the fire. Additional impacts to sites in DX included damage caused by suppression and rehabilitation activities.

Table 12.2 lists the historic Homestead period sites that were impacted by the Cerro Grande Fire and the specific type of damage sustained. The site and the damage sustained are then discussed in further detail for each site.

TA-6

LA 21334. Before the Cerro Grande revisit, the site was most recently surveyed in March 2000. The site consists of the remains of the Sanchez y Montoya Homestead, which dates to the period of circa 1899 to 1942 (Masse et al. 1991). It is located on the north side of Two-Mile Mesa in ponderosa pine and piñon-juniper woodland. The site contained the remains of a one-room log cabin, a smaller log structure presumed to represent a storage shed, a pole corral, a wire-fenced garden, a wagon road, two waterholes, a footpath, and an isolated section of fence line with a gate. During the Cerro Grande revisit, several changes were noted. Principally, it was noted that the cabin has burned completely (see Figures 11.1 and 11.2). The foundation is visible and there are several historic artifacts, mostly metal, piled inside of the burned cabin (barrels, barrel hoops, corrugated metal, cans, buckets, and wire). Most other features at the site have also burned completely. It appears that the north side of the site, near the canyon, burned hotter than the southern portion. The garden area, which was fenced with historic barbed wire, is slightly burned. There are a few fence posts still standing, some slightly burned and some severely burned. During the revisit, portions of a wagon road were encountered and located and recorded by use of the Global Positioning Satellite system. The first segment is 11 m long by 2 m wide by 0.7 m deep and has dry laid, unshaped, and stacked boulders. The second segment is 7 m long by 2 m wide by 0.8 m deep. Rehabilitation efforts have been implemented at the site. Erosion control devices have been placed down the wagon road, and there are wattles placed near the bottom of the canyon. The site was not impacted by suppression activities. Attempted dendrochronological dating of site was unsuccessful (see Appendix I).

Table 12.2. Homestead Period Sites in DX Directly Impacted by the Cerro Grande Fire.

| Technical Area | LA Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Snags/partial burned trees in site area | Suppression | Rehabilitation | Enhanced erosion |
|----------------|-----------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|---|-------------|----------------|------------------|
| 6 | 21334 | Moderate | No | No | No | No | Yes | No | No | Yes | No | Yes | Yes |
| 6 | 89770 | Low | No | No | No | No | Yes | No | No | No | No | No | No |
| 6 | 131233 | Low | No | No | No | Yes | No | No | No | Yes | No | No | Yes |
| 6 | 131236 | Moderate | No | No | No | Yes | No | No | No | Yes | No | Yes | Yes |
| 6 | 136860 | Moderate | No | No | No | No | Yes | No | No | Yes | No | No | No |
| 8 | *16808 | | | | | | | | | | | | |
| 8 | 89825 | Low | No | No | No | No | No | No | No | Yes | No | No | Yes |
| 8 | 89826 | Low | No | No | No | No | Yes | No | No | Yes | No | No | Yes |
| 8 | 89829 | Low | No | No | No | Yes | Yes | No | No | Yes | No | No | Yes |
| 8 | 89830 | Low | No | No | No | Yes | No | No | No | Yes | No | No | Yes |
| 9 | 21297 | Moderate | No | No | No | Yes | Yes | No | No | Yes | No | No | Yes |
| 9 | 136828 | Low | No | Yes | No | No | Yes | No | No | No | No | No | No |
| 14 | 21298 | Severe | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | No | No | Yes |
| 14 | 136674 | Moderate | No | No | No | Yes | No | No | No | Yes | No | No | No |
| 15 | 108746 | Low | No | No | No | No | No | No | No | No | No | No | No |
| 15 | 136627 | Moderate | No | No | Yes | Yes | No | No | No | Yes | No | No | No |
| 15 | 136948 | Moderate | No | No | No | No | No | No | No | Yes | No | No | No |
| 15 | 137011 | Moderate | No | No | No | No | No | No | No | Yes | No | No | No |
| 22 | 21331 | Moderate | Yes | Yes | No | Yes | No | No | No | Yes | No | No | No |
| 22 | 86643 | Low | No | No | No | No | Yes | No | Yes | Yes | No | No | No |
| 22 | 89769 | Severe | No | No | No | Yes | No | No | No | Yes | No | No | Yes |
| 22 | 136859 | Severe | No | No | No | No | No | No | No | Yes | No | No | Yes |
| 40 | 136861 | Moderate | No | No | No | No | No | No | No | Yes | No | Yes | Yes |

*Impacted by flooding immediately following the Cerro Grande Fire; see discussion for FMU-80

LA 89770. Before the Cerro Grande revisit, the site was most recently surveyed in March 2000. The site is that of a Homestead period wagon road with associated fence lines. No artifacts were identified during either visit. The wagon road segments are located in ponderosa pine forest, with some scrub oak in the area. The area around the site was minimally burned during the Cerro Grande Fire, some of the architectural wood (fence posts) at the site was burned. It is thought that the fire caused the loss of between 12 and 17 posts. The site was not impacted by suppression or rehabilitation activities. Attempted dendrochronological dating of several posts proved unsuccessful (see Appendix I).

LA 131233. Before the Cerro Grande revisit, the site was most recently surveyed in March 2000. In this visit, as well as the Cerro Grande Fire revisit, the site was identified as a Homestead period wagon road. The road segment is 4 m long by 2.3 m wide by 0.3 m deep. One rut is 0.26 m wide by 0.13 m deep; the other is 0.69 m. A wall located immediately north of the drainage was identified. No artifacts were identified during either visit. The wagon road segments are located in ponderosa pine forest, with some

scrub oak in the area. The area around the site was minimally burned during the Cerro Grande Fire, but there are stump and root holes and partially burned trees in the site vicinity. The site was not impacted by suppression or rehabilitation activities.

LA 131236. Before the Cerro Grande revisit, the site was most recently surveyed in March 2000. In this visit, as well as during the Cerro Grande Fire revisit, the site was identified as a Homestead period artifact scatter. Items at the site include leather and other perishable materials, as well as a wide array of historic cans. The site is located in the ponderosa pine forest and scrub oak woodland. The area around the site was moderately burned during the fire as is evidenced by stump holes, partially burned trees in the site area, and burned artifacts. Because of the effects of the fire, and primarily due to the accelerated decomposition rates in the site area, data recovery is recommended. These efforts should take the form of intensive analysis of surface artifacts and the collection of pertinent items. Despite significant losses from the fire, however, the site was not impacted by suppression or rehabilitation activities.

LA 136860 (TK-7). The site was first identified during the survey of sites undertaken as part of the assessment of damage done to sites during the Cerro Grande Fire. During our inspection, the site was identified as a Homestead period fenceline. No associated artifacts were identified. LA 136860 is located in a moderately burned scrub oak and ponderosa pine forest. The degree of the burn severity is evidenced at the site by the loss of approximately 50% of the architectural wood associated with the fence posts and by a number of snags or partially burned trees in the general site area. The site was not impacted by suppression or rehabilitation activities.

TA-8

LA 16808. This Homestead period site is that of the large Anchor Ranch complex, which straddles both DX and FMU-80 near State Route 501. Because that portion of the site damaged by the Cerro Grande Fire (by post-fire flooding) is located within FMU-80, the discussion will be deferred for inclusion below with the descriptions of impacts in FMU-80.

LA 89825. Before the Cerro Grande revisit, the site was most recently surveyed in 1993. In both visits, the site was identified as a Homestead period wagon road segment. There was a wooden bridge associated with the wagon road, but that structure burned during the fire. No artifacts were identified during either visit. The wagon road segments are located in a mixed ponderosa pine forest and piñon-juniper woodland. The area around the site was minimally burned during the Cerro Grande Fire, but most of the architectural wood (bridge) at the site was burned. Additionally, there are approximately 100 partially burned trees in and around the site that have the potential to do more damage to the site. Because of the high number of trees burned in the area, wattles have been placed across a small drainage near the end of the wagon road segment. The site was not impacted by suppression activities.

LA 89826. Before the Cerro Grande revisit, the site was most recently surveyed in 1993. In both visits, the site was identified as a Homestead period structure. The site consists of the collapsed portions of a wooden bridge over a segment of LA 89825 (Figure 12.2), a Homestead period wagon road. Nothing remains of the wooden structure as it appears to have washed away. There is a single piece of burned wood lodged between two rocks on the south side of the crossing. It is probable that this is the only piece of wood remaining. No artifacts were identified during either visit. LA 89826 was located in a mixed ponderosa pine forest and piñon-juniper woodland. The area around the site was minimally burned during the Cerro Grande Fire. In addition to the destruction of the wooden bridge, the fire also affected the site in the form of 10 partially burned trees in the immediate site vicinity. The site was not impacted by suppression or rehabilitation activities. Dendrochronological dating of bridge specimens proved unsuccessful, however one element could be matched with the Anchor Ranch Ice House (see Appendix I).



Figure 12.2. LA 89826, a Homestead period structure after the Cerro Grande Fire.

LA 89829. Before the Cerro Grande revisit, the site was most recently surveyed in 1993. In both visits, the site was identified as a Homestead period artifact scatter. Items at the site include metal materials, a wide array of historic cans, and approximately 10 pieces of charred lumber. The site is located in the ponderosa pine forest, and the area around the site was minimally burned during the fire. The effects are evidenced by three stump holes in the site area, the loss of architectural wood, and a number of partially burned trees in the site area. The site was not impacted by suppression or rehabilitation activities.

LA 89830. Before the Cerro Grande revisit, the site was most recently surveyed in 1993. In both visits, the site was identified as a Homestead period artifact scatter. Items at the site include metal materials and a wide array of historic cans and bottles. Many of the cans and bottles burned during the fire and are in poor condition. The site is located in the ponderosa pine forest and the area around the site was minimally burned during the fire. The effects are evidenced by one stump hole in the site area and two partially burned trees in the site area. The site was not impacted by suppression or rehabilitation activities.

TA-9

LA 21297. Before the Cerro Grande revisit, the site was most recently surveyed in 1979. In both visits, the site was identified as a Homestead period structure. The site consists of the collapsed remains of a wagon frame and a stove. The wood around the wagon frame burned during the fire. Only a few artifacts were identified during the Cerro Grande revisit. LA 21297 is located in a mixed ponderosa pine forest and piñon-juniper woodland, with a fairly high proportion of scrub oak. The area around the site was

moderately burned during the Cerro Grande Fire. Effects of the fire are evidenced by one stump hole in the immediate site area, the loss of architectural wood features in the form of the wagon frame, and approximately 50 partially burned trees in the site vicinity. The site was not impacted by suppression or rehabilitation activities.

LA 136828 (TK-18). LA 136828 was first identified during the survey undertaken as part of the assessment of damage done to archaeological sites during the Cerro Grande Fire. During inspection of the site, it was identified as a historic structure dating to the Homestead period. The site is a small corral-like feature with fence posts and a rock wall. The rock wall is approximately 0.5 m to 0.8 m high and sits adjacent to a small drainage. One of the fence posts was completely burned during the fire, and two others were slightly burned. No associated artifacts were identified. LA 136828 is located in an area of scrub oak and ponderosa pine forest that was minimally burned. The degree of the burn is evidenced at the site by smoke and soot damage on the rock wall and by the loss of all or parts of a number of fence posts. The site was not impacted by suppression or rehabilitation activities.

TA-14

LA 21298. Before the Cerro Grande revisit, the site was most recently surveyed in 1979. In both visits, the site was identified as a historic structure dating to the Homestead period. The site consists of a rock pile that may have been a windbreak or structure foundation and an associated can scatter (Figure 12.3). A wooden ramada was identified during the 1979 visit, but the ramada was seemingly destroyed during the fire since no traces of it were visible during the Cerro Grande revisit. LA 21298 is located in a mixed



Figure 12.3. LA 21298, a Historic period structure after the Cerro Grande Fire.

ponderosa pine forest and piñon-juniper woodland, with a fairly high density of scrub oak in the area. The area around the site was severely burned as is evidenced by cracking, spalling, and soot damage on the masonry blocks; stump and root holes on the site itself as well as in the surrounding area; snags and partially burned trees in both the immediate and general vicinity of the site; and the loss of architectural wood in the form of a ramada. The site was not impacted by suppression or rehabilitation activities, but because of the extensive damage, it is suggested that potentially threatening trees in the area be removed.

LA 136674 (BV-10). The site was first identified during the Cerro Grande Fire assessment survey. During our inspection, the site was identified as part of a Homestead period wagon road (1913 bench marker). No associated artifacts were identified. Due to its proximity to both the Gomez and Montoya Homestead sites, however, the wagon road may be related to one of these sites. LA 136674 is located in a moderately burned scrub oak and ponderosa pine forest. The degree of the burn severity is evidenced at the site in the form of numerous stump holes and snags or partially burned trees in the site area. The site was not impacted by suppression or rehabilitation activities.

TA-15

LA 108746. Before the Cerro Grande revisit, the site was most recently surveyed in 1992. In both visits, the site was identified as a Homestead period artifact scatter. There is an anomalous pile of rocks associated with the trash scatter. The rock pile consists of approximately 20 to 25 rocks set in a somewhat semicircular pattern. The rocks are situated in an area measuring 3.5 m north-south by 3 m east-west. The rocks are not shaped and it is thought that the semicircle may simply represent a push-pile from the nearby fire road. LA 108746 is located in a mixed ponderosa pine and piñon-juniper area. The area around the site was minimally burned during the fire and there are no visible effects present at the site. The site was not impacted by suppression or rehabilitation activities.

LA 136627 (ALM-71). The site was first identified during the Cerro Grande Fire assessment survey. During our inspection, the site was identified as a Homestead period artifact scatter. Items at the site include a small number of historic cans and glass fragments. LA 136627 is located in the ponderosa pine forest, and the area around the site was moderately burned during the fire. The effects of the burn are evidenced at the site by the presence of approximately five stump holes in the site area and by about 20 partially burned trees. The site was not impacted by suppression or rehabilitation activities.

LA 136948 (Q-135). Before the Cerro Grande revisit, the site was most recently surveyed in 1992. In both visits, the site was identified as a Homestead period structure consisting of a bridge and a road cut (formerly components A and C). No artifacts were identified during the 2001 revisit although several cans were identified in the initial visit. LA 136948 is located in a mixed ponderosa pine and piñon-juniper area. The area around the site was moderately burned during the Cerro Grande Fire as is evidenced by approximately 20 snags and partially burned trees around the site. The site was not impacted by suppression or rehabilitation activities.

LA 137011 (W-21). During the Cerro Grande revisit, the site was identified as a Homestead period artifact scatter. Items identified at the site include a wide array of bottles and cans that likely represent a trash dump. LA 137011 is located in a mixed ponderosa pine and piñon-juniper area. The area around the site was minimally burned during the fire as is evidenced by approximately 10 snags or partially burned trees in the vicinity of the site. The site was not impacted by suppression or rehabilitation activities.

TA-22

LA 21331. Before the Cerro Grande revisit, the site was most recently surveyed in 1979. In both visits the site was identified as a series of linear rock piles dating to the Homestead period. The original site recorders noted that there may have been field clearing associated with the piles. The piles range from 5 m to 10 m in length and are about five rocks wide. A small number of metal cans were identified in the site area and it's thought that the rock piles are associated with these; but this assignment is not certain. LA 21331 is located in ponderosa pine forest, but there is some scrub oak in the area. The area around the site was moderately burned during the Cerro Grande Fire. These effects are evidenced by cracking, spalling, smoke, and soot damage on the rocks; approximately 70 stump holes in the site area; and a large number of partially burned trees. The site was not impacted by suppression or rehabilitation activities.

LA 86643. Before the Cerro Grande revisit, the site was most recently surveyed in 1991. The site is the remains of the Gomez Homestead. It contained the following features: a cabin foundation (Figure 12.4) and roof beams, corrugated roof material, a stone structure, a corral (Figure 12.5), a historic trash dump, an horno, and a fence line. The site is located in ponderosa pine forest, and the area was moderately impacted by the fire. Many of the features mentioned above were burned during the Cerro Grande Fire, although nothing was completely destroyed. The cabin foundation area was burned; only one wood roof beam remains. The corrugated roof material associated with the cabin is burned but intact (in four pieces).



Figure 12.4. LA 86643, the cabin foundation after the Cerro Grande Fire.

Several of the cabin foundation blocks have been discolored by smoke damage. The corral area is burned with trees being burned at the base. The northwest section of the masonry wall of the corral is most heavily burned. Remnants of a burned post are present in the north-central sections of the corral, and

about 10 pieces of corrugated metal are also burned. The trash dump area was heavily burned, and while the artifacts suffered damage, they are all still intact. The area around the fence line was also burned, but there are still about 30 wooden fence posts present, five of which are still upright. The stone structure and the horno were not burned during the fire. In addition to these effects, evidence of the burn is also present in the form of approximately 20 partially burned trees in the site area that have the potential to further damage the structures. Architectural wood was also lost. Because of the heavy damage the site sustained, especially the corral, it is recommended that the burned trees in the corral be cut down to prevent further damage. The site was not impacted by suppression or rehabilitation activities. An attempt was made to dendrochronologically date the Gomez homestead fenceline, however this proved unsuccessful due to the erratic nature of the ring series of the juniper posts (see Appendix I).



Figure 12.5. LA 86643, B. Harmon at the corral after the Cerro Grande Fire.

LA 89769. Before the Cerro Grande revisit, the site was most recently surveyed in 1992. In both visits, the site was identified as a Homestead period artifact scatter (Figure 12.6). Items at the site include approximately 120 metal cans, three glass shards, and three broken bottles. The cans were burned during the fire but remain intact. Heavy pine duff obscures the ground surface, and more trash could be present below the duff level. LA 89769 is located in a mixed ponderosa pine and piñon-juniper area. The area around the site was severely burned during the fire. The effects are evidenced by approximately five stump holes in the site area and over 30 partially burned trees. Because of the severe burn, most of the duff is gone. As a result, it is recommended that two wattles be placed upslope and downslope (one each) of the trash scatter. The site was not impacted by suppression or rehabilitation activities.



Figure 12.6. LA 89769, an artifact scatter after the Cerro Grande Fire.

LA 136859 (TK-6). The site was first identified during the survey of sites undertaken as part of the assessment of damage done to sites during the Cerro Grande Fire. During inspection, the site was identified as a Homestead period artifact scatter. Items at the site include a small number of historic cans and glass fragments. LA 136859 is located in the ponderosa pine forest, and the area around the site was severely burned during the fire. The effects of the burn are evidenced at the site by the presence of a number of partially burned trees in the site area. The site was not impacted by suppression or rehabilitation activities.

TA-40

LA 136861 (TK-8). The site was first identified during the survey of sites undertaken as part of the assessment of damage done to sites during the Cerro Grande Fire. During inspection, the site was identified as a Homestead period artifact scatter. Items at the site include historic cans and other trash. LA 136861 is located in the ponderosa pine forest, and the area around the site was moderately burned during the fire. The effects of the burn are evidenced at the site by the presence of a number of partially burned trees in the site area. Rehabilitation efforts have been implemented at the site as wattles have been placed in the area and reseeding has been undertaken. The site was not impacted by suppression activities.

Homestead Period Fire Effects in Facilities Management Unit 80 (FMU-80)

A total of 11 Homestead period sites in FMU-80 were directly impacted by the Cerro Grande Fire (see Table 12.3). The intensity of the Cerro Grande Fire in DX ranged from low to severe. Fire impacts to historic sites in DX included cracking and spalling on masonry as heat from the fire sometimes caused masonry blocks to crack. Smoke and soot damage often occurred on the masonry blocks associated with historic structures and rock features. Burned trees resulted in abundant stump and root holes that damaged architectural features. Burned trees resulted in abundant stump and root holes that damaged architectural features.

Table 12.3. Homestead Period Sites in FMU-80 Directly Impacted by the Cerro Grande Fire

| Technical Area | LA Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Additional snags/partial burned trees in site area | Suppression | Rehabilitation | Enhanced erosion |
|----------------|-----------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|--|-------------|----------------|------------------|
| 5 | 30638 | Severe | Yes | Yes | No | No | No | No | Yes | Yes | No | Yes | No |
| 8 | *16808 | None | No | No | No | No | No | No | No | No | No | No | Yes |
| 16 | **16807 | Moderate | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | No | No | Yes |
| 46 | 64874 | Moderate | Yes | No | No | No | Yes | No | Yes | Yes | No | No | No |
| 49 | 15866B | Moderate | No | No | No | No | No | No | No | No | Yes | No | No |
| 49 | 137758 | Low | Yes | Yes | No | No | No | No | No | Yes | No | No | No |
| 50, 55 | 131237 | Moderate | No | No | No | Yes | Yes | No | No | Yes | No | No | Yes |
| 60 | 89776 | Moderate | No | No | No | Yes | Yes | No | No | Yes | No | No | Yes |
| 69 | 89821 | Low | No | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 69 | 89822 | Low | No | No | No | Yes | No | No | No | Yes | No | No | Yes |
| 69 | 89823 | Low | No | No | No | No | No | No | No | No | No | No | No |

*Site partially in DX; **Site partially in ESA

TA-5

LA 30638. Before the Cerro Grande revisit, the site was most recently surveyed in 1998. During this inspection, the site was identified as part of the Fermin Vigil homestead, with a cement-lined cistern (Figure 12.7) and historic trash scatter present. During the Cerro Grande revisit, the site was identified as a historic cistern and associated trash scatter dating to the Homestead period. The site is located in the bottom of Mortandad Canyon and was severely impacted by the fire. The severity of the burn is evidenced by the destruction of wooden structures (fence posts) associated with the site, as well as by cracking, spalling, and soot damage on the cistern itself and the presence of numerous partially burned trees in the site area. The snags pose a potential threat to the cistern, especially if they fall and further damage the masonry structure. In addition to impacts from the fire itself, the site has also been impacted by several rehabilitation activities, including the felling of a single tree, the placement of mulch across the site, and a fence around the cistern. The site was not impacted by suppression activities.



Figure 12.7. LA 30638, a cistern with associated masonry.

TA-8

LA 16808. This Homestead period site is that of the large Anchor Ranch complex, which straddles and extends into both DX and FMU-80 near State Route 501. Before the Cerro Grande revisit, the site was extensively surveyed in 1992 and 1997 (Manz and Hoagland 1997), but was revisited immediately after the Cerro Grande Fire in August 2000 in conjunction with emergency flood control actions (Masse 2000).

The site covers an area of nearly 19 ha (46 ac), and contains the remains of six structures and 24 associated discrete features. Due to the fortunate and prescient circumstance of tree thinning in and around the site in 1998, the year before the Cerro Grande Fire, the structures and features of the Anchor Ranch complex were not directly impacted by the fire itself. However, one structure, the remains of an ice storage house, was destroyed by flooding immediately after the fire (Masse 2000). Steen (1982:Fig. 8) photographed the ice storage house as it looked some twenty years ago prior to the Cerro Grande Fire. On 28 June 2000, an intense 20-minute rain cell in the burned forest upslope (to the west) and across State Route 501 from the Anchor Ranch complex, created a localized flashflood that overflowed the pond above the ice house and then demolished the ice house structure itself (see Figures 11.5 and 11.6; Masse 2000).

Dendrochronological samples were collected from logs used in the construction of the ice house and submitted to the University of Arizona Tree Ring Laboratory both prior to and after the Cerro Grande Fire (see Appendix I). These various samples yielded tree-felling dates ranging between 1929 to 1934, roughly the same time as wood procurement for the Victor Romero Homestead. One of the undatable logs at the ice storage house was from the same tree used for the bridge at LA 89826.

TA-16

LA 16807. This site was last visited in 1997 as part of the West Jemez Road Tree Thinning Project. This homestead site is located on a small bench above Water Canyon, east of State Road 501 (West Jemez Road). The homestead complex measures approximately 70 m north-south by 80 m east-west. Water Canyon bounds the site on the northern side. The vegetation consists of ponderosa pines, numerous species of scrub and brush, and short grass. Nine features have been identified at the site: a cabin foundation (Feature 1), a standing wood-frame one-seat privy (Feature 2), alignments of barbed wire fence (Feature 3), a possible cement spring box (Feature 4), the remains of a wooden box (Feature 5), two anomalous rock clusters (Feature 6), a small rock alignment (Feature 7), a tuff rock with the initials AGS carved in it (Feature 8), and a trash scatter (Feature 9). There is also a light scatter of obsidian at the site, from a nearby Archaic period lithic scatter.

LA 16807 represents the remains of the Ted Mather and Rose Grant homestead. Ted Mather was a hunter and trapper for Frank Bond at the Baca Location in the Jemez Mountains above the Pajarito Plateau (Foxy and Tierney 1999:12). Ted and his wife, Rose Grant, lived at their homestead for several years before moving to the Los Alamos town site when he was hired as a wrangler at the Ranch School.

At the time the site was visited for this assessment there was heavy snow cover, but it was determined that the site area was moderately burned. The most extensive burning occurring upslope from the site to the north and east. The privy, fence posts, and portions of the cabin foundation were burned during the fire, as were some of the artifacts. Cracking and spalling on masonry is only evident on the privy. There are approximately five stump holes in the immediate site area, five trees that have fallen on wood or rubble, two snags that have the potential to damage structures, and many additional snags and partially burned trees in the site area. Suppression impacts to this site consist of tree felling, with about 10 large ponderosa pines currently lying on the site. Because the site is located at near the base of Water Canyon, there is some erosional threat. Treatment is recommended for the site and includes the filling of stump holes and the felling of snags that pose a threat to the integrity of the site.

TA-46

LA 64874. This Homestead period site is that of a couple of historic brass cap markers (dated 1913 and 1938, respectively) and associated stone cairns, and adjacent Homestead period fence lines. The site is situated in mixed piñon-juniper and ponderosa pine forest on top of a mesa immediately west of the western tip of the San Ildefonso Sacred Lands. Prior to the Cerro Grande Fire, the site was last recorded in 1986 at the time it was originally identified. The area was moderately burned during the Cerro Grande Fire, which resulted in the partial or complete destruction of most of the individual fence posts. A number of snags are situated in and around the remnants of the fence lines.

TA-49

LA 15866B. This Homestead period site is that of a log cabin originally recorded in 1977 (Steen 1982:35-36). The site is situated within the footprint of the 1977 La Mesa Fire. The original field forms—filled out less than one month after the fire—indicate that the only evidence of structural remains at that time was a stone fireplace. Frustratingly, no mention of the La Mesa Fire is made for this site in Steen's 1982 report or on the original field form, therefore it is not known to what degree the fire may have impacted the origin wooden elements of the site. However, photographs of the cabin location taken immediately after the La Mesa Fire (Steen 1982:Fig. 6) clearly indicate that at least the log foundation of the structure was

present and burned during the La Mesa fire. The Cerro Grande Fire was of moderate severity in and around the site area, but little or no damage was apparently inflicted on the site itself, undoubtedly largely the result of the earlier destruction during the 1977 La Mesa Fire. There was no evidence of Cerro Grande Fire damage on two small stacks of stone that likely represent the remains of the fireplace. A fire suppression road, created or enhanced during the Cerro Grande Fire, is situated a few meters south of the two stone piles. Given the present amorphous nature of the site, it is unclear if this road caused any actual damage to the Homestead site.

LA 137757 (BCH-18). The site was first identified during the Cerro Grande Fire assessment survey. The site was identified as a “C”-shaped rock feature with associated Homestead period artifacts. The stones associated with the feature were cracked and exhibited spalling due to the fire, and there was at least one snag within the general vicinity of the site. Because the site was first discovered during the assessment survey, it is unknown as to whether or not there had been a loss of architectural wood or features. Erosion is not a problem at the site, and no treatment measures were recommended.

TA-50 and TA-55

LA 131237. The site is an assemblage of homesteading features and associated historic trash from two adjoining homesteads: the McDougall and Roybal homestead (ca. 1908 to 1942) and the David Romero homestead (ca. 1893 to 1942). Together the homesteads occupied portions of what is now both TA-50 and TA-55. The two homestead sites originally provided separate Laboratory of Anthropology site numbers (including also LA 131238), but were eventually combined due to confusion as to which of the features belong to the David Romero homestead site and which belong to that of Robert McDougall/Ramon Roybal (McDougall sold his property to Roybal).

LA 131237 was initially extensively studied as part of the 1984 to 1986 data recovery program by Cross-Cultural Research Systems, Inc. (McGehee et al. 1988) at the adjacent Victor Romero homestead (LA 16806), but this work has not yet been reported. The site was restudied during the period immediately before and after the Cerro Grande Fire as part of the Pajarito Gas Line Project (Masse et al. 2001). This Historic period homestead site consists of a corral, two trash scatters, a dugout, a cistern, a fence, and possibly a log cabin. The site is situated in an open grassland area. The corral and house sites have some unburned and partially burned posts that are potentially suitable for dendrochronology. There are also several pieces of wood and board fragments around the dugout and cistern; some of these exhibit slight charring. The entire area suffered from a duff fire, the scrub oak and grasses also burned. The northern portion of the trash scatter burned, while the southern part did not. There are stump holes, snags, and partially burned trees in the vicinity of the site. Samples collected from the corral and submitted to the University of Arizona Tree Ring Laboratory in 1990 yielded a tight cluster of dendrochronological dates around 1906 to 1908 (see Appendix I).

TA-60

LA 89776. Before the Cerro Grande revisit, the site was most recently surveyed in 1992. The site was identified as a possible privy, with a square depression and wood planks present at the site. During the Cerro Grande revisit, LA 89776 was identified as a small Homestead period location, represented by a possibly privy, a square depression (perhaps representing a dugout), and a light historic trash scatter. Although the site originally contained several wood planks, these are presumed destroyed by the fire since they could not be relocated. The site burned moderately heavy, with a presumed loss of architectural

features and wood planks. Additionally, there is one stump hole in the site area, and 10 to 12 snags or partially burned trees. The site was not impacted by suppression or rehabilitation activities.

TA-69

LA 89821. The site was last visited in 1992 as part of the Environmental Restoration Project. Situated in a mixed ponderosa pine forest and a piñon-juniper woodland, the site consists of a historic can scatter. The area was subject to a low burn; there are stump holes, burned trees, and snags near the site. All that remains of the site are a bucket and two cans. Treatment is not recommended, as this site is not eligible.

LA 89822. Before the Cerro Grande revisit, the site was last visited in 1992 as part of the Environmental Restoration Project. The site is situated in a mixed ponderosa pine forest and piñon-juniper woodland. Subject to a low burn, there are stump holes, snags, and burned trees in the site area. The site consists of a Homestead period can scatter with buckets, pails, and cans identified in the area. Some of these artifacts burned as a result of the fire. This site is not eligible and no treatment is recommended.

LA 89823. The site was last visited in 1993 as part of the Environmental Restoration Project. Situated in a mixed ponderosa pine forest and piñon-juniper woodland, the site consists of a historic artifact scatter. The site surface was subject to a low burn and some of the glass, ceramics, and cans burned during the fire. Regardless, the artifacts remain in relatively good condition, and the site is eligible. No treatment is recommended for the site.

Homestead Period Fire Effects in Rendija Canyon

The fire impacted at least two of the three known historic sites in the Rendija Canyon Tract, the third could not be relocated (Table 12.4). The primary impact of the fire on these sites was the destruction of most or all of the wood present. Other features were damaged by the heat and/or smoke. Since the wood enclosure, the sole indisputably cultural feature at LA 70026, was destroyed, this site is now not eligible for inclusion on the NRHP (pending SHPO concurrence).

Table 12.4. Homestead Period Sites in Rendija Canyon Directly Impacted by the Cerro Grande Fire

| LA Number | Degree of Burn | Cracking/spalling on masonry | Smoke/soot damage on masonry | Stump/root holes on or adjacent to masonry | Additional stump/root holes in site area | Loss of architectural wood/features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Additional snags/partial burned trees in site area | Suppression | Rehabilitation | Enhanced erosion |
|-----------|----------------|------------------------------|------------------------------|--|--|-------------------------------------|-----------------------------------|---|--|-------------|----------------|------------------|
| 70026 | Severe | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Yes |
| 85407 | Moderate | No | No | No | No | Yes | No | No | No | No | No | No |

LA 70026. This site was last visited in 1992 as part of Environmental Restoration Project. The site was a historic wood enclosure of unknown function and consisting of a single tier of hand-cut logs (5 m by 7 m). In the center of the wood enclosure was a small rock pile, possibly the result of a tree fall. The site is located in the bottom of Cabra Canyon in ponderosa pine forest. No artifacts were observed but earlier surveys dated the site to the Homestead Era based on its construction method and the age of the trees

growing inside the enclosure. The area around the site was severely burned. There are 50+ snags and partially burned trees in the area and three stump holes on or near the site. The wood that made up the enclosure was almost totally destroyed; only one partially burned log fragment that may have been part of the original structure remains. The rock pile is still present, although 90% of the rocks have suffered soot damage. As the site is located in a canyon bottom, there is a high erosional threat. In a letter dated May 10, 1993, the SHPO identified the site as possibly eligible for inclusion on the NRHP. With the complete, or virtually complete, destruction of the enclosure, this site is no longer eligible.

LA 85407. This site (Figure 12.8) was last visited in 1992 as part of the Bason Land Exchange. The site is part of the historic Serna homestead consisting of the remains of a log cabin, a second possible log structure of unknown use, a corral, a fence line, a trash scatter, and two rock features (possible hornos). While the site itself measures 100 m by 90 m, the entire homestead tract covered a little over 60 ac. Artifacts in the trash scatter and on other parts of the site include lard, sardine, coffee, kerosene, and condensed milk cans, galvanized metal, and purple glass fragments. The homestead was inhabited by the family of Fidel Serna, and later the family of José María Serna, from the early 1900s to 1942 or 1943 (Peterson and Nightengale 1993:50–57). There is also a very light scatter of prehistoric artifacts on the site consisting of several obsidian flakes, one Biscuit B sherd, and two Kapo Black sherds. The site is located on a small bench to the north of the canyon. Vegetation consists mostly of short grasses and small stands of piñon and juniper. The area in general is moderately burned, although most of the wood from the cabin, the possible structure, and corral was destroyed. The fence posts also suffered some damage although many of them are still present. Attempted dendrochronological dating of four log specimens from the site proved unsuccessful (see Appendix I).



Figure 12.8. LA 85407, view of cabin remains, facing northeast.

SPECIFIC FIRE EFFECTS ON MANHATTAN PROJECT AND EARLY COLD WAR PERIOD ARCHAEOLOGICAL SITES

Manhattan Project and Early Cold War Fire Effects in Engineering Sciences and Applications Division (ESA)

A total of four Cold War period archaeological sites were identified within ESA as being impacted by the Cerro Grande Fire. No Manhattan Project sites were so identified. These are summarized in Table 12.5.

Table 12.5. Manhattan Project Sites in ESA Directly Impacted by the Cerro Grande Fire.

| Technical Area | LA Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Additional snags/partial burned trees in site area | Other | Suppression | Rehabilitation | Erosion |
|----------------|-----------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|--|-------|-------------|----------------|---------|
| 16 | 136820 | Moderate | No | No | No | No | No | No | No | Yes | No | No | No | No |
| 16 | 136830 | Moderate | No | No | No | No | No | No | No | Yes | No | No | No | No |
| 16 | 136841 | Moderate | No | No | No | No | No | No | No | Yes | No | No | No | No |
| 16 | 136880 | Severe | No | No | No | No | No | No | No | No | No | No | No | No |

TA-16

LA 136820 (TK-1). This site consists of a concentration of LANL trash and a dispersed scatter of associated trash. Materials identified at the site include broken glass, rusted cans and buckets, some type of textile, wire, and other miscellaneous artifacts. This site most likely dates back to the Cold War Era. Site burn severity was moderate, and no treatment is recommended.

LA 136830 (TK-2). The site consists of a highly concentrated can scatter with one broken glass bottle present. The cans sustained some fire damage, but remain intact for the most part. Site burn severity was moderate, and few artifacts appeared to be damaged. There is no evidence of rehabilitation or site disturbance. No treatment is recommended.

LA 136841 (TK-3). The site consists of a historic trash scatter. Artifacts observed include cans, glass, textiles, batteries, wire, buckets, and miscellaneous materials most likely dating to the Cold War Era. The burn severity in the area is moderate; however, all of the artifacts appear to have escaped fire damage. One large concentration lies near the canyon edge, all other artifacts are highly dispersed throughout the area. No treatment is recommended for this site.

LA 136880 (WBM-8). This site consists of a historic trash scatter dating back to the Cold War Era. There are several pipe fragments and pipe sections throughout the site. This site is located southwest of building TA-16-1486 by approximately 60 m. The site burn severity is severe. There were no suppression impacts to this site, and no treatment is recommended.

Manhattan Project and Early Cold War Fire Effects in Dynamic Experimentation Division (DX)

A total of seven Manhattan Project archaeological sites in DX were directly impacted by the Cerro Grande Fire (Table 12.6). No archaeological sites specifically assigned to the Early Cold War period were identified as being damaged by the fire. As noted earlier, the intensity of the Cerro Grande Fire in DX ranged from low to severe. Fire impacts to historic sites in DX included cracking and spalling on masonry as heat from the fire sometimes caused masonry blocks to crack. Smoke and soot damage often occurred on the masonry blocks associated with historic structures and rock features. Burned trees resulted in abundant stump and root holes that damaged architectural features. Additionally, fallen trees and partially burned trees also affected the appearance and stability of cultural remains in these areas. At a single site, LA 89771, both suppression and rehabilitation activities were undertaken, but the site was impacted by intensive suppression activities that involved the movement of vehicles across and through the boundaries of the site.

Table 12.5 lists the historic sites that were impacted by the Cerro Grande Fire and the specific type of damage sustained. The sites and the damage sustained are then discussed in further detail.

Table 12.6. Manhattan Project Sites in DX Directly Impacted by the Cerro Grande Fire.

| Technical Area | LA Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Snags/partial burned trees that can damage structures | Suppression | Rehabilitation | Enhanced erosion |
|----------------|-----------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|---|-------------|----------------|------------------|
| 6 | 25284 | Severe | No | No | No | No | No | No | No | Yes | No | No | |
| 6 | 89771 | Severe | No | No | No | Yes | Yes | No | No | Yes | Yes | Yes | |
| 6 | 89772 | Moderate | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | No | |
| 6 | 89773 | Severe | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | No | Yes | |
| 6 | 131234 | Moderate | No | No | No | No | Yes | No | No | No | No | No | |
| 9 | 89834 | Moderate | No | No | No | No | No | No | No | Yes | No | No | |
| 69 | 89827 | Low | No | No | No | No | No | No | No | Yes | No | No | |

TA-6

LA 25284. Before the Cerro Grande revisit, the site was most recently surveyed in February 2000. In this visit, as well as the Cerro Grande Fire revisit, the site was identified as a large concrete bowl/basin that was constructed during the Manhattan Project period. The bowl is 60 m in diameter and was poured in 16 pie-shaped wedges that are about 3.2 m wide in the center of the bowl and about 10.8 m wide at the outside edge. The center of the bowl has a raised dome that is about 14.5 m in diameter and 1 m high. The structure is located in ponderosa pine forest, although there is some scrub oak in the area. The area around the site was severely burned during the fire. The severity of the burn, however, did not impact the site greatly as the only visible effects are a number of partially burned trees in the general area of the site. Despite the severity of the burn in the area, the site was not impacted by suppression or rehabilitation activities.

LA 89771. Before the Cerro Grande revisit, the site was most recently surveyed in 1992. In this visit, as well as the Cerro Grande Fire revisit, the site was identified as a dam made from piled earth and reinforcing boards constructed for a stock tank/reservoir during the Manhattan Project period. The historic structure is approximately 30 m long on a southwest-northeast axis, and is 3.0 m wide at the northeast end, 5.1 m wide in the middle, and 4 m wide at the southwest end. There are two to four eroded areas (possible sluices) in the dam. In the 1992 visit, four ponderosa pines were visible as part of the dam construction; these burned during the Cerro Grande Fire. LA 89771 is located in a mixed ponderosa pine forest and piñon-juniper woodland, with a small amount of scrub oak in the area. The area around the site was severely burned during the fire as is evidenced by stump holes in the site area, the loss or architectural wood associated with the dam, and a number of partially burned trees and residual snags in the general area of the site. Because of the severity of the burn in the site area, both suppression and rehabilitation activities were undertaken in the form of tree felling.

LA 89772. Before the Cerro Grande revisit, the site was most recently surveyed in 1992. In this visit, as well as the Cerro Grande Fire revisit, the site was identified as a drainage/water-control feature that was constructed during the Manhattan Project period. The water-control feature is approximately 9.9 m long on the north-south axis and runs across a drainage that flows east-west. In the 1992 visit, the feature consisted of timbers, logs, and unshaped tuff blocks; the majority of the wooden components burned in the Cerro Grande Fire. LA 89772 is located in a ponderosa pine forest with a moderate amount of scrub oak in the area. The area around the site was severely burned during the fire as is evidenced by cracking, spalling, and soot damage on the masonry blocks, stump holes in the site area, the loss or architectural wood associated with the water-control feature, trees that have fallen on the structure, and snags and partially burned trees that are both in the general area of the site and have the potential to further damage the structure in the future. Despite the numerous effects from the fire, suppression impacts were not visible and rehabilitation activities were not undertaken at the site.

LA 89773. Before the Cerro Grande revisit, the site was most recently surveyed in 1992. In this visit, as well as the Cerro Grande Fire revisit, the site was identified as a drainage/water-control feature that was constructed during the Manhattan Project period. The water-control feature consists of a pile of unshaped rubble and earth and a rock alignment. In the 1992 visit, the feature also contained two tree stumps, but these were likely burned in the Cerro Grande Fire. LA 89773 is located in a ponderosa pine forest with a moderate amount of scrub oak in the area. The area around the site was severely burned during the fire as is evidenced by cracking, spalling, and soot damage on the masonry blocks; stump holes in the site area; the loss of architectural wood associated with the water-control feature; trees that have fallen on the structure; and snags and partially burned trees that are in the general area of the site and have the potential to further damage the structure. Because of the extensive damage at the site, rehabilitation activities were undertaken. To prevent further damage to the water-control feature, a number of trees were felled in the vicinity of the site. There were no suppression impacts at the site.

LA 131234. Before the Cerro Grande revisit, the site was most recently surveyed in March 2000 (Masse et al 2001). In this visit, as well as the Cerro Grande Fire revisit, the site was identified as consisting of three historic storage structures dating to the Manhattan Project period. These structures are identified as “bomb huts”—that is, wooden storage structures that contained casings and other such components of nuclear weapons prior to their assembly. These three storage units are referred to as Structures A, B, and C. Structures A and B were completely burned during the Cerro Grande Fire, and only small, isolated portions remain. Structure C escaped direct fire effects and appears to be mostly undisturbed (Figure 12.9). The structures are located in the ponderosa pine forest, and there is some scrub oak in the area. The area around the site was moderately burned during the fire, and a significant amount of architectural wood was lost, specifically that associated with Structures A and B (Figure 12.10). Despite significant losses from the fire itself, the site was not impacted by suppression or rehabilitation activities.



Figure 12.9. LA 131234, Structure C after the Cerro Grande Fire.



Figure 12.10. LA 131234, A. Madsen at Structure B after the Cerro Grande Fire.

TA-9

LA 89834. Before the Cerro Grande revisit, the site was most recently surveyed in 1992. In both visits, the site was identified as a Manhattan Project period artifact scatter. Items at the site include bottle glass, metal cans, metal fragments, and areas of poured concrete. The scatter has been disturbed by an old gas line corridor and by recent road shoulder construction activities. LA 89834 is located in a mixed ponderosa pine and piñon-juniper area. The area around the site was moderately burned during the fire. The effects are evidenced by approximately 10 partially burned trees in the site area. The site was not impacted by suppression or rehabilitation activities.

TA-69

LA 89827. Before the Cerro Grande revisit, the site was most recently surveyed in 1993. In both visits, the site was identified as a Manhattan Project period water-control feature. The site is located in a streambed within a mixed ponderosa pine and piñon-juniper area. Site items include a metal pipe and a vertical ceramic pipe, as well as a concrete slab. The concrete slab is mostly buried in the stream channel under boulders and sediments. Archaeologists visiting the site during the Cerro Grande revisit could not locate a “wooden cover.” It is presumed that this washed away during the floods after the fire (such as occurred for the previously discussed Anchor Ranch Ice House) or was burned during the fire itself. The area around LA 89827 was minimally burned during the fire. The effects are evidenced by the possible loss of architectural features (wooden cover) and five partially burned trees in the site area. The site was not impacted by suppression or rehabilitation activities.

Manhattan Project and Early Cold War Fire Effects in Facility Management Unit 80 (FMU-80)

Only one Early Cold War period archaeological site (and no Manhattan Project sites) in FMU-80 was identified as being directly impacted by the Cerro Grande Fire. Table 12.7 lists the site that was impacted by the Cerro Grande Fire and the specific type of damage sustained. The site and the damage are then discussed in further detail.

Table 12.7. Early Cold War Period Site in FMU-80 Directly Impacted by the Cerro Grande Fire.

| Technical Area | LA Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Additional snags/partial burned trees in site area | Suppression | Rehabilitation | Enhanced Erosion |
|----------------|-----------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|--|-------------|----------------|------------------|
| 69 | 89820A&B | None | No | No | No | No | No | No | No | No | Yes | No | Yes |

TA-69

LA 89820A and B. The site, situated in a ponderosa pine forest area, is identified as a Manhattan/Cold War structure. Previously identified in 1996, the site consists of two components. The first component includes two cement structures (component A1 and A2) and associated trash and structural debris. The second component is a “rock” mound (component B) containing red bricks and milled lumber. The Cerro Grande Fire did not burn through this area and the cement structures are not disturbed, however a fire suppression road has bisected the mound. The mound is located 20 m to the southeast of provenience A2. During the Cerro Grande revisit, LA 89820A and B (the cement structures and the mound) were treated as a single site. Low-level erosion, the result of the road cut, affects the site.

Manhattan Project and Early Cold War Fire Effects in Rendija Canyon

No known Manhattan Project or Early Cold War period archaeological sites are present within Rendija Canyon.

SPECIFIC FIRE EFFECTS ON HISTORIC PERIOD ARCHAEOLOGICAL SITES OF UNDETERMINED AFFILIATION***Historic Period Undetermined Affiliation Fire Effects in Engineering Sciences and Applications Division (ESA)***

There was a single Historic period archaeological site of undetermined affiliation identified within ESA as being impacted by the Cerro Grande Fire. This is listed in Table 12.8 and is described below.

Table 12.8. Historic Site of Undetermined Affiliation in ESA Directly Impacted by the Cerro Grande Fire.

| Technical Area | LA Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Additional snags/partial burned trees in site area | Other | Suppression | Rehabilitation | Enhanced erosion |
|----------------|-----------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|--|-------|-------------|----------------|------------------|
| 16 | 136851 | Moderate | No | No | No | | No | No | No | No | No | No | No | No |

TA-16

LA 136851 (TK-4). The site is a trail that runs along the west-facing slope of the canyon between buildings TA-16-410 and TA-16-370. The trail is not rock cut, it is visible in the sediments. The trail runs for about 150 m northwest-southeast. Three recent-looking (less than 100 years) cairns help to delineate the boundaries of the trail. Site burn severity is moderate, but the fire did not affect the trail. There is no recommended treatment for this site.

Historic Period Undetermined Affiliation Fire Effects in Dynamic Experimentation Division (DX)

A total of five Historic period archaeological sites of undetermined affiliation were identified within DX as being directly impacted by the Cerro Grande Fire. As noted earlier, the intensity of the Cerro Grande Fire in DX ranged from low to severe. Table 12.9 lists the sites that were impacted by the Cerro Grande Fire and the specific type of damage sustained. The sites and damage are then discussed in further detail.

Table 12.9. Historic Sites of Undetermined Affiliation in DX Directly Impacted by the Cerro Grande Fire.

| Technical Area | LA or Temporary Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Additional snags/partial burned trees in site area | Suppression | Rehabilitation | Enhanced Erosion |
|----------------|------------------------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|--|-------------|----------------|------------------|
| 9 | 89838 | Severe | Yes | Yes | No | Yes | Yes | No | Yes | Yes | No | No | No |
| 9 | 136831 | Severe | No | No | No | No | No | No | No | Yes | No | No | No |
| 14 | 136832 | Moderate | Yes | Yes | No | Yes | No | No | No | Yes | Yes | Yes | Yes |
| 15 | Q-134 | Severe | No | No | No | No | Yes | No | No | Yes | No | No | No |

TA-9

LA 89838. Before the Cerro Grande revisit, the site was most recently surveyed in 1996. In both visits, the site was identified as a Historic period rock feature consisting of a small, somewhat curved alignment of flat, tabular, rhyolitic slabs piled four courses high (Figure 12.11). The alignment appears to represent some sort of hunting blind or windbreak. Based on the presence of axe cut timbers, the site was assigned to the Historic period. The site is located in a mixed ponderosa pine and piñon-juniper woodland area. The area around LA 89838 was severely burned during the Cerro Grande Fire as is evidenced by cracking, spalling, and soot staining on a large percentage of the masonry blocks; stump and root holes both on the site itself and in the immediate area around the site; the loss of architectural wood that was referenced in the 1996 visit; and partially burned trees both on the site itself and in the general site area. Despite the severe burn, however, the site was not impacted by suppression or rehabilitation activities.

LA 136831 (TK-20). LA 136831 was first identified during the survey undertaken as part of the assessment of damage done to archaeological sites during the Cerro Grande Fire. During inspection, the site was identified as a temporally undetermined wagon road segment. Rusty wire and broken glass were identified on the sides of the road, but it could not be determined if the artifacts were related to the road. The road itself has been stabilized near the creek bed near the site, and it appears as though it is used today as a fire road. LA 136831 is located in an area of scrub oak and ponderosa pine forest that was severely burned during the fire. The degree of the burn is evidenced by a high number of snags and partially burned trees in the general vicinity of the site. The site was not impacted by suppression or rehabilitation activities.



Figure 12.11. LA 89838, a Historic period rock feature after the Cerro Grande Fire.

TA-14

LA 136832 (TK-21). The site was first identified during the Cerro Grande Fire assessment survey. During inspection, the site was identified as an undetermined Historic period road segment. No associated artifacts were visible on the surface. LA 136832 is located in a moderately burned scrub oak and ponderosa pine forest. The degree of the burn severity is evidenced at the site in the form of cracking, spalling, and soot damage on tuff cobbles along the road; by numerous stump/root holes; and by approximately 20 snags and partially burned trees in the general vicinity of the site. Additionally, the site was impacted by both suppression and rehabilitation activities as several of the downed trees in the area were felled and wattles were placed across the surface of the road segment.

TA-15

Q-134. Before the Cerro Grande revisit, the site was most recently surveyed in 1992. Q-134 is located in a mixed ponderosa pine and piñon-juniper area. The site was identified as an undetermined Historic period structure. The site was described as a possible pen or temporary rectangular structure made out of logs laid on top of each other. The logs were two to four courses high, and the structure was three-sided with the south side absent. Some historic artifacts, including a lard can and several food cans, were identified in the vicinity. Due to the proximity of LA 136948, a Homestead period bridge and trash dump, it is quite possible that Q-134 dates to the same period, but this could not be verified. The site was not formally recorded at the time of its discovery in 1992. During the 2001 revisit, the site could not be

relocated despite an extensive search. It is presumed that the logs, and thus the structure itself, were destroyed during the fire as the area around the site was severely burned. The effects of the burn are evidenced by approximately 50 snags and partially burned trees in the site area. The site area was not impacted by suppression or rehabilitation activities. Because of the lack of formal recording prior to destruction, a Laboratory of Anthropology (LA) number has not been assigned to the site.

Historic Period Undetermined Affiliation Fire Effects in Facilities Management Unit 80 (FMU-80)

Only one Historic period site of undetermined affiliation in FMU-80 was identified as being directly impacted by the Cerro Grande Fire. Table 12.10 lists the site that was impacted by the Cerro Grande Fire and the specific type of damage sustained. The site and the damage are then discussed in further detail.

Table 12.10. Historic Site of Undetermined Affiliation in FMU-80 Directly Impacted by the Cerro Grande Fire.

| Technical Area | LA Number | Degree of Burn | Cracking or spalling on masonry | Smoke or soot damage on masonry | Stump or root holes on or adjacent to masonry | Additional stump or root holes in site area | Loss of architectural wood or features | Fallen tree(s) on walls or rubble | Snags/partial burned trees that can damage structures | Additional snags/partial burned trees in site area | Suppression | Rehabilitation | Enhanced erosion |
|----------------|-----------|----------------|---------------------------------|---------------------------------|---|---|--|-----------------------------------|---|--|-------------|----------------|------------------|
| 60 | 89778 | Moderate | Yes | Yes | No | Yes | No | No | No | Yes | No | No | Yes |

TA-60

LA 89778. Before the Cerro Grande revisit, the site was most recently visited in 1992. The site was identified as a Historic period water-control feature (dam/pond) constructed from axe-cut timbers, earth, and rock. The topography on site slopes to the north-northeast. No artifacts were visible on the surface and therefore the site's cultural affiliation is uncertain. However, due to the proximity of the site to a large homestead (LA 30640), the dam/pond can be reasonably hypothesized to be directly associated with the homestead.

LA 89778 is located in a portion of the technical area that saw a moderate degree of burning during the fire. The axe-cut timbers identified during the 1992 survey were not identified during the revisit, suggesting they may have burned. Additionally, the site has been impacted by the fire in other ways as is evidenced by cracking and spalling on approximately 25% of the masonry. In addition, there is smoke and soot damage on much of the masonry, numerous stump holes in the site area, and several snags or partially burned trees surround the site. A large ponderosa pine has fallen approximately 10 m north of the water-control feature, but it is not directly impacting the site. The berm of the feature is eroding away, and several snags could affect the preservation of this feature. Removal of the snags may or may not help. The site was not impacted by suppression or rehabilitation activities.

Historic Period Undetermined Affiliation Fire Effects in Rendija Canyon

No Historic period archaeological sites of undetermined affiliation were identified within Redija Canyon as being impacted by the Cerro Grande Fire.

IMPACTS OBSERVED AT HISTORIC PERIOD ARCHAEOLOGICAL SITES NOT RELATED TO THE CERRO GRANDE FIRE

In addition to damage sustained as a direct result of the Cerro Grande Fire, assessment efforts also included the documentation and recording of damage sustained either as an indirect result of fire activities or from other factors. Damage to these sites occurred, or is currently occurring, primarily due to natural erosion activities. In some cases, the Cerro Grande Fire has exacerbated prior erosion problems. Tables 12.10 through 12.12 lists the historic sites in the facility management units that are currently sustaining damage from non-fire related impacts, or natural erosion enhanced by the Cerro Grande Fire. It is noted that sites falling into this category were not documented for ESA.

Table 12.11. Historic Sites in DX with Impacts not Related to the Cerro Grande Fire.

| Technical Area | LA Number | Non-Fire Related Impacts |
|----------------|-----------|---|
| 6 | 21334 | Low-level erosion; fear that foundation will move downslope |
| 6 | 86771 | Moderate to high erosion; pedestalling present and no duff at site |
| 6 | 89772 | Low-level erosion |
| 6 | 89773 | Low-level erosion |
| 6 | 131233 | Low-level erosion from active gully scouring in the bottom of the wash |
| 6 | 131236 | Low-level erosion; the potential for sheet erosion exists at the site |
| 8 | 16808 | Moderate to high erosion with drainages running throughout the extent of the site area; potential for reservoir to flood and damage associated structures |
| 8 | 89825 | Low-level erosion as there are three erosional gullies that cut the road |
| 8 | 89826 | Moderate to high erosion; the wood bridge that was situated across drainage has been washed away |
| 8 | 89829 | Low-level erosion with shallow SE trending slope |
| 8 | 89830 | Moderate to high erosion as site is located on slope adjacent to gully on bedrock |
| 9 | 21297 | Low-level erosion as site slopes to south and surface is covered with duff |
| 14 | 21298 | Low-level erosion as site is on a slight slope |
| 14 | 136832 | Moderate to high erosion with arroyos in the area approaching 50 cm deep |
| 22 | 89769 | Moderate to high erosion as site is located in a north-south trending gully |
| 40 | 136861 | Low-level erosion, especially at the mesa edge |
| 69 | 89827 | Moderate to high erosion as the site is located in a stream bed |

Table 12.12. Historic Sites in FMU-80 with Impacts not Related to the Cerro Grande Fire.

| Technical Area | LA Number | Non-Fire Related Impacts |
|----------------|-----------|--|
| 5 | 136724 | Low-level erosion |
| 50, 55 | 131237 | Trash deposit should be subject to infield analysis, possible excavation of cistern and dugout |
| 69 | 89818 | Moderate to high threats from erosion, artifacts are on a slope |
| 69 | 89819 | Low-level erosion, artifacts are in a diffuse drainage |
| 69 | 89822 | Low-level erosion, artifacts are in drainages although surface is duff covered |

Table 12.13. Historic Site in Rendija Canyon with Impacts not Related to the Cerro Grande Fire.

| Technical Area | LA Number | Non-Fire Related Impacts |
|----------------|-----------|---|
| Rendija Canyon | 70026 | Erosional threat: high (in canyon bottom) |

RECOMMENDED TREATMENTS TO MINIMIZE FIRE-RELATED IMPACTS AT HISTORIC PERIOD ARCHAEOLOGICAL SITES

Treatment is recommended for several of the Historic period sites assessed in the four facility management units. This information is summarized below in Tables 12.14 through 12.17. The technical area in which the site is located, the site type, the type of action suggested for the site, and a general description of the action are all included in the tables. Figure 12.12 shows LA 131236, one of the five historic sites in DX recommended for treatment. This site is typical of historic artifact scatters where the burning of the duff and the complete burning of trees and their roots have impacted both the surface and subsurface character of the deposits.

It is noted that the treatment recommended for these historic sites is different and separate from that of the ongoing program of rehabilitation of Native American archaeological sites discussed in the next chapter (Chapter 13).

It is also noted that we attempted to recover dendrochronological samples from every fire-impacted historic Homestead period site where it seemed practical and appropriate to do so. A large number of samples were taken from burned fence posts and the remnants of log structures (such as cabins and bridges). The results of the analysis of these samples are provided in Appendix I.

Table 12.14. Historic Period Sites with Recommended Treatment in ESA.

| Technical Area | LA Number | Site Type | Type of Action to be taken at Site | Recommended Treatment |
|----------------|-----------|-----------|------------------------------------|---|
| 16 | 16807 | Homestead | Treatment | Remove felled trees and dead trees in site area |

Table 12.15. Historic Period Sites with Recommended Treatment in DX.

| Technical Area | LA Number | Site Type | Type of Action to be taken at Site | Recommended Treatment |
|----------------|-----------|--------------------|------------------------------------|---|
| 6 | 131236 | Artifact scatter | Data Recovery | In-field surface analysis and data collection of pertinent items (see Figure 12.12) |
| 9 | 89838 | Rock feature | Treatment and Data Recovery | Fell 1 to 3 trees in the area of the site, and collect a dendro sample for the wooden beam fragment |
| 14 | 21298 | Historic structure | Treatment | Cut down and remove some of the severely burned trees that may further damage the site |
| 22 | 86643 | Historic structure | Treatment | Cut down trees in feature corral |
| 22 | 89769 | Artifact scatter | Treatment | Place one wattle upslope of trash scatter and one downslope of scatter |



Figure 12.12. LA 131236, with stump holes in the artifact scatter.

Table 12.16. Historic Period Sites with Recommended Treatment in FMU-80

| Technical Area | LA Number | Site Type | Type of Action to be taken at Site | Recommended Treatment |
|----------------|-----------|-----------|------------------------------------|---|
| 50, 55 | 131237 | Homestead | Data Recovery | Trash deposit should be subject to infield analysis, possible excavation of cistern and dugout; fencing of the cistern and dugout |
| 60 | 30640 | Homestead | Treatment | Put a fence around the perimeter of the site |
| 60 | 89776 | Homestead | Treatment | Site perimeter needs to be fenced, as it is immediately adjacent to a log chipping station |

Table 12.17. Historic Period Site with Recommended Treatment in Rendija Canyon

| Technical Area | LA Number | Site Type | Type of Action to be taken at Site | Recommended Treatment |
|----------------|-----------|-----------|------------------------------------|--|
| Rendija Canyon | 85407 | Homestead | Data Recovery | Collection of dendrochronological samples for possible dating of the homestead |

